CHAPTER V
CONCLUSIONS

5.1 Conclusion

The adsorption isotherm of DTAB on quartz could be divided clearly into three region. Regions I was concentrations of DTAB less than 7.5 μmol/l. Region II was concentration of DTAB solution between 7.5 and 15,000 μmol/l. Finally, the region IV was concentrations more than the CMC or 15,000 μ mol/l. The region III was difficult to see from the adsorption.

Electrophoretic mobility results indicated that DTAB adsorbed on quartz surface governed the zeta potential value of quartz. The zero in electrophoretic mobility did not correspond to maximum in flotation efficiency, average particle size, or maximum particle size. Neither did it correspond to the Region II/III transition.

The flotation efficiency increased with an increase of air flow rate only up to a point. The maximum removal clearly appeared at region II of the adsorption isotherm.

The quartz particles can flocculate in region I to region III but almost fully disperse in region IV. The maximum in flotation efficiency corresponded precisely to the plateau in maximum aggregate size (Figure 4.14).

The machcanism steps of ore flotation can be described as follows:

In Region I, surfactants adsorbs on the ore fines by electrostatic forces, without admicelle formation. The surface of the ore fines becomes slightly hydrophobic. Some increase in flotation efficiency is seen. And some increase in aggregate size is seen

In region II the surfactant forms hydrophobic patch (local bilayer) on the surface of ore fines, the ore fines form aggregates. The hydrophobic patchs are exposed with air bubbles which result in adhesion of the ore fines to the bubbles and flotation efficiency increased dramatically.

In Region III ore fine begin redisperse, exposing a hydrophilic to bilayer to the solution. Flotation efficiency begins to decrease.

5.2 Recommendations

The meachanaism of ore flotation depends upon many factors. It is recomended that further studies address the effect of pH, temperature, types of surfactant, collision energy air buble size, sizes of particle, types of solid and solid mixture, to further confirm the correspondence between aggregation of particles and flotation efficiency.

Finally, this experiment should repeat by using a bola-form quart of C-12 chain length to see relationship between aggregation and flotation.